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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,445	12/27/2005	Francis Garnier	126375	3480

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OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER

BASTIANELLI, JOHN

ART UNIT	PAPER NUMBER
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3753

NOTIFICATION DATE	DELIVERY MODE
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06/01/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
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Office Action Summary

Application No.

10/562,445

Applicant(s)

GARNIER, FRANCIS

Examiner

John Bastianelli

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2010.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-12 and 15-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1,3-12 and 15-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 27 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Request for Continued Examination

1. The request filed on March 4, 2010 for a Request for Continued Examination (RCE) is acceptable and an action on follows.

Drawings

2. The drawings are objected to because Figs. 2-7 are not clear and cannot be understood as they are of such poor quality and lack any reference designations whatsoever. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Trademarks

3. The use of the trademark Teflon has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use

thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

6. The abstract of the disclosure is objected to because it is not in a single paragraph, uses the term "The present invention relates" (this is implied) . Correction is required. See MPEP § 608.01(b).

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

7. The disclosure is objected to because of the following informalities: The specification lacks headings. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. Claims 11 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The terms "any other equivalent material" and "equivalent compound" are not disclosed in the disclosure so are indefinite as the examiner does not know which materials or compounds are "equivalent" or even to what respect are they "equivalent".

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 3-6, 8-12, 15-16 and 18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Willis US 6,314,317.

Regarding claim 1, Willis discloses all the claim features including, an electrically controlled fluidic valve 10 (Fig 2) separating two volume spaces comprises at least one microporous membrane 13 (Fig 2) having approximately circular pores 14 (Fig 2) of approximately constant diameter (Col 5, lines 34-35), wherein the pore diameter lies in the range from .2 μm -1 μm (Col 5, lines 44-51, ".1 μm to about 10 μm ") clearly this falls in the claim range and since this teaching would lead someone to use those pore sizes the reference meets the claimed limitation, the surface of the microporous membrane 13 (Fig 2) is at least partly covered with at least one electroactive polymer 20 (Fig 3) essentially placed within the pores 14 (Fig 2/Col 2, lines 16-18) of said microporous membrane 13 (Fig 2), so that, when said polymer is in a defined oxidation-reduction state (Col 7, lines 4-13), it blocks off said pores (Col 1, lines 38-42); and an electrical supply (Col 16, lines 3- 8) intended to allow said valve to switch from the closed state (Fig 3A) to the open state (Fig 3B), and vice versa, by changing the oxidation-reduction state of the electroactive polymer 20 (Fig 3). It would have been obvious to one having

ordinary skill in the art at the time the invention was made to make the pore diameter to be .2 μm to be small enough but not too small.

Regarding claim 3, Willis discloses the electrical (Col 16, lines 3-8) supply has at least one electrode ("working electrode" Col 16, line 7) and at least one counterelectrode ("auxiliary electrode" Col 16, lines 7-8).

Regarding claims 4 and 5, Willis discloses that the electrode is formed by the microporous membrane ("non-conductive material" Col 6, lines 17-19); characterized in that the microporous membrane 13 (Fig 2) is made of a nonconductive material (Col 5, lines 13-14).

Regarding claim 6, Willis discloses that the nonconductive material is "NUCLEOPORE7 - a polycarbonate" (Col 5, lines 24-30).

Regarding claim 8, Willis discloses that the membrane further includes at least one external metal layer (Col 5, lines 63-65).

Regarding claim 9, Willis discloses that the membrane further includes at least one intermediate polymeric layer to which the external metal layer is fastened (Col 6, lines 13-16).

Regarding claims 10 and 11, Willis discloses that the microporous membrane is made of a conductive material (Col 5, lines 21-24); characterized in that the conductive material is a metal taken from the group comprising: gold, platinum, palladium or any other equivalent material (Col 5, lines 18-24).

Regarding claim 12, Willis discloses that the electroactive polymer is a conjugated polymer such as polyaniline (Col 2, lines 44-49).

Regarding claim 15, Willis discloses a microfluidic device, characterized in that it includes at least one valve (Col 4, lines 54-58).

Regarding claim 16, Willis discloses a process for producing a valve characterized in that it comprises the following steps: a) a microporous membrane is placed in an electrolytic solution containing at least one monomer (Col 9, lines 6-14); b) an electrochemical current is induced in said electrolytic solution (Col 9, lines 32-35); c) the monomer is fixed on to the microporous membrane, and especially in the pores of said membrane (Col 9, lines 13-21); d) the radial polymerization of the monomer in the pores of said membrane is carried out (Col 9, lines 13-21); and e) the polymerization is stopped by cutting off the electrochemical current when the polymers reach the center of the pores, so that said polymers block the pores without overlapping one another (Col 10, lines 23-33).

Regarding claim 18, Willis discloses a process characterized in that the monomer is taken from the group comprising: pyrrole, thiophene and derivatives thereof (Col 8, lines 12-17).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Willis (US 6,314,317) in view of Campbell (US 3,681,209).

Regarding claim 7, Willis discloses all the claimed features except for, the nonconductive material is a polymer such as, cellulose nitrate. Campbell teaches wherein the nonconductive material is a polymer taken from cellulose esters or cellulose nitrates (Col 2, lines 34-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the device in Willis to select the nonconductive material of cellulose nitrate, as taught and suggested by Campbell, for the purpose providing a membrane made of a nonconductive material that has high cohesive strength (Col 1, lines 13-20).

14. Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willis (US 6,314,317) in view of Irie (US 5,314,606).

Regarding claim 17, Willis discloses all the claimed features including, a prior step of metalizing (Col 6, lines 30-33) the microporous membrane when said membrane is made of a nonconductive material (Col 5, lines 24-30), said metallization step comprising the following substeps:

a') a microporous membrane is placed in a monomer solution (Col 6, line 30; Col 9, lines 13-14); b') the monomer is fixed onto the microporous membrane (Col 9, lines 13-21); c') the polymerization of the monomer is carried out over the entire surface of the membrane so as to obtain a polymer layer (Col 9, lines 6-12), except for, d') the membrane thus obtained is placed in a solution containing at least one metal salt; and e') the electrodeposition of the metal on the polymer layer is carried out by an oxidation-

reduction reaction so that the microporous membrane is covered with a metal film. Irie teaches, d') the membrane thus obtained is placed in a solution containing at least one metal salt (Col 4, lines 22-35); and e') the electrodeposition of the metal on the polymer layer is carried out by an oxidation-reduction reaction so that the microporous membrane is covered with a metal film (Col 4, lines 22-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the process in Willis to include steps "d')" and "e')", as taught and suggested by Irie, for the purpose of coating the microporous membrane with a suitable metal layer to gain the advantages and desired characteristics of the metal.

Regarding claim 19, Willis discloses all the claim features except for the metal salt is gold chloride. Irie teaches that the metal salt is gold chloride (Col 4, lines 40-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the process in Willis to include a metal salt of gold chloride, as taught and suggested by Irie, for the purpose of coating the microporous membrane with a metal layer of gold compound to gain the advantages and desired characteristics of the gold compound, such as resistance to corrosion.

15. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Willis (US 6,314,317) in view of Shikida et al. (US 5,284,179).

Regarding claim 20, Willis discloses the microporous membrane having a thickness of 1-20 μm but lacks the thickness being 25-30 μm (the examiner would like to note that the applicant discloses the microporous membrane of lying within a range of 10 μm to 1 mm, preferably from 10 to 30 μm which Willis meets) and elapsed time of the valve

switching from closed to open is 1-100 milliseconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thickness of the membrane of Willis from 20 μm to be 25 μm as this is merely a 25% increase in size and would be obvious to make it slightly thicker to make it less prone to breaking and also a change in size is an obvious matter of design choice that is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). Shikida discloses opening and closing the valve in several tens milliseconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the switch time of the valve of Willis be within several tens milliseconds as disclosed by Shikida to provide a fast switch time for opening and closing the valve.

Response to Arguments

16. Applicant's arguments filed February 4, 2010 have been fully considered but they are not persuasive. The examiner is baffled by some of the applicant's arguments. For example, Willis specifically states that the pore diameter is .1 to 10 μm in which .2 to 1 μm is within the range of .1 to 1 μm as claimed by the applicant. This DIRECTLY reads on applicant's claimed range. Next, applicant is arguing that the use of a NULEOPORE 7 membrane (which, by the way, is only used to reject claim 6) does not teach a diameter of the pore. This is still the range of .1 to 10 μm as cited previously. And most baffling of all is that the applicant argues that the passage of col. 5, lines 44-51 is facially inaccurate as it has to do with membrane diameter? The passage clearly states

"The diameter of the pore...". The applicant argues that "the microporous membrane having approximately circular pores of approximately constant diameter" is not disclosed by Willis. Willis Fig. 2 clearly discloses the pores in the shape of a circle and col. 5, lines 34-35, clearly states that "can be performed to create pores having a reasonably uniform diameter". Regarding applicant's argument that Willis' range does not amount to a teaching of "sufficient specificity", the applicant has failed to provide evidence of unexpected results within the claimed narrow range, and upon review of the applicant's disclosure, there is no evidence of unexpected results in this claimed narrow range. Applicant repeats the argument about "the microporous membrane having approximately circular pores of approximately constant diameter" which is clearly disclosed as cited above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Bastianelli whose telephone number is (571) 272-4921. The examiner can normally be reached on M-Th (8-6:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (571) 272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Primary Examiner
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